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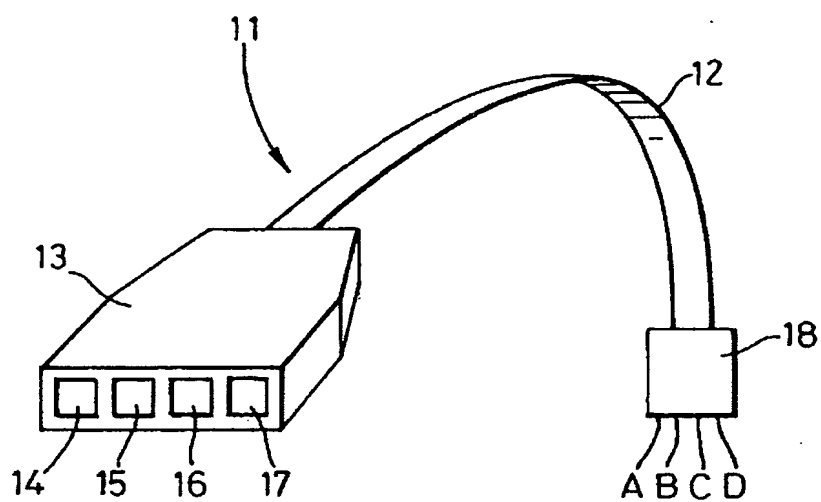


Fig. 1

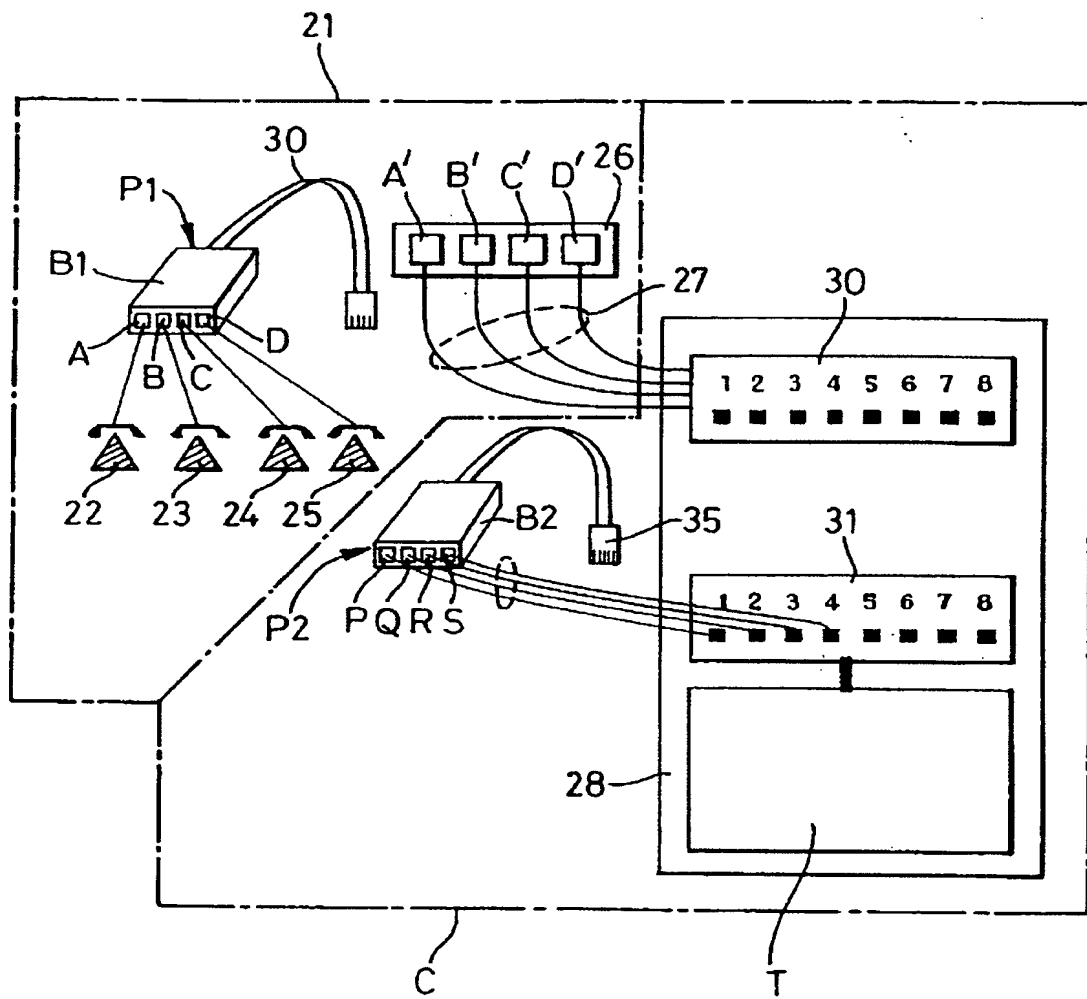


Fig. 2

ADAPTION OF CABLING

This invention relates to the adaption of cabling. That is to say it is concerned with a method of, and apparatus for, readily adapting an existing cabling system to provide for
5 an increased number of user channels. It is particularly, but not exclusively, concerned with adapting cabling for voice and data networks.

The increasingly widespread use of information technology and changes in the number or location of staff involved frequently leads to a requirement for changing and
10 upgrading in communication network at a given location. Until the introduction of what is conveniently described as structured cabling systems any change or upgrade in the cabling arrangements was likely to affect other users on the system. Earlier cabling systems made use of different hardware media for the transmitted matter: typically a twisted cable pair for voice and a coaxial cable for data. The method of installation of
15 these earlier cabling installation meant that installation or modification on any scale could only be undertaken as a major, and expensive, exercise. Consequently a new cabling installation may be undertaken with old systems left in place with consequent congestion in regions where space and access are likely to be particularly significant. Current cabling installations for working environments take a modular form directed to
20 providing in given area for a user one or more data outlets, phone outlets and power outlets. In addition there is increasingly likely to be a need for an optical fibre outlet. To standardise the provision of structured cabling to meet modular installation requirements there exists International Standard ISO/IEC 11801 (hereafter referred to as 'the Standard') classifying four classes of copper cabling and one for optical cable. The
25 classification serves to establish minimum transmission requirements for the support of the applications specified in each class dependent on a number of criteria.

Typically at a given working location there is provided an outlet which is linked by a house cable to a distribution cabinet to which other house cables can arrive typically from
30 other outlets on the same floor. In the present description reference is made to a Category 5 system. Such a system makes use of a cable containing four pairs of wires with each pair being provided for a given hand set or other phone unit. However the invention is

applicable to cables carrying other conductor groupings and numbers and for phone systems with individual hand-sets being coupled into a system by three or more wires.

- Typically according to a first aspect of the present invention there is provided a method of modifying a communication system, typically a Category 5 system according to the Standard, including: an outlet unit including four outlets to provide at a working region individual couplings to each of four telephone handsets or comparable devices; each outlet having four discrete wire terminations; a house cable containing at least four twisted pairs of conductors and having one end from which the cables are connected to the outlet unit to provide a discrete communication path along the cable for each handset; and a cabinet unit providing a patch termination for each twisted pair of conductors from the other end of the house cable to the one end (and from comparable other ends of any other house cables from one or more further outlet units); and an interface patch termination providing entry to a two wire telephone system; characterised by the steps of:
- 1 removing the couplings of each individual hand set or comparable unit from the outlet unit;
 - 2 providing a first patching unit comprising a first length of cable containing at least four twisted pairs of conductors;
 - 20 one end of the cable having a termination in the form of four subsidiary outlets each outlet providing a compatible coupling for an individual telephone hand set or comparable device;
 - the other end of the cable having a termination in the form of a plug compatible with one outlet of the outlet unit;
 - 25 3 attaching at least some of the previously removed couplings of each individual hand set or comparable unit, each to a subsidiary outlet;
 - 4 inserting the termination at the other end of the cable into one of the outlets on the outlet unit so as to link the subsidiary outlets to a given twisted pair in the house cable;
 - 30 5 providing a second patching unit comprising a length of second cable containing at least four twisted pairs of conductors;
 - one end of the second cable having a termination in the form of a plug compatible with a socket in the patch termination of the cabinet unit

corresponding to the end of the given twisted pair in the house cable; the other end of the second cable to the one end providing a discrete path for each four subsidiary outlets of the first patching unit;

6 attaching each discrete path to the interface patch termination so that entry into
5 the two wire telephone system is established as it was before the first step of the present method was undertaken or in accordance with some other arrangement; and

7 attaching any further required telephone connection to vacant outlets in the outlet unit.

10

According to a second aspect of the present invention there is provided a patching unit for modifying a communication system comprising first and second patching units adapted to provide for undertaking the steps of the method according to the first aspect.

15 An exemplary embodiment of the invention will now be described with reference to the accompanying drawings of a patching process of which:

Figure 1 shows diagrammatically a patching unit;

Figure 2 shows diagrammatically the use of two patching units of a type broadly as shown in Figure 1 in order to provide for the connection of a fresh telephone
20 unit to an existing communication network.

20

Figure 1

A patching unit 11 comprising a length of cable 12 having at: one end a socket unit 13 with four subsidiary sockets 14, 15, 16, 17 each adapted to receive a BT plug from a
25 conventional telephone hand set; and the other end to the one end an RG45 outlet plug 18 with four terminations A, B, C, D.

Figure 2

Working space 21 in a building including four phone hand sets 22, 23, 24, 25 which are
30 usually attached by way of four corresponding outlets A' to D' in an outlet unit 26 to one end of a house cable 27. The other end of the house cable 27 enters a patch cabinet 28 in a service cubicle C (which can be up to 90 metres from the outlet unit 26). The patch cabinet 28 serves to provide a readily modifiable link between the outer end of house cable 27

30

(and any other such cable/s from adjacent working spaces on the same floor, or some other nearby floor, of the building). The patch cabinet 28 has two sets of terminations:

first set 30 terminating the ends of the house cable 27;

second set 31 terminating the ends of each line of a two wire telephone system

5 broadly indicated by outline T providing for connection to networks outside the building, .

Given that in the working space 21 there are four hand sets to 22-25 occupying the four available outlets A' to D' in outlet unit 26 in the event of a further hand set is to be added
10 to the system it would heretofore been necessary to provide further cabling over the length of the house cable 27. This is a relatively expensive exercise and apart from the installation of new cabling and equipment and the setting up of the relevant hardware there is also a downtime applicable to users of the existing hands sets in the area.

15 To render the installation of new equipment a simpler and quicker operation the present invention provides for the use of two patching units P1 and P2 similar to unit patching unit 11 of Figure 1.

Patching unit P1

20 This provides a flying block B1 containing four subsidiary sockets A to D adapted to receive phone plugs for hand sets 22-25. Cable 30 serves to couple by way of RG45 plug 31 the block B1 to outlet A' one of the four RG 45 outlets in outlet unit 26. This leaves outlets B', C', D' free for connecting in three fresh hand sets or comparable devices in addition to the existing four handsets 22-25. The house cable 27 has ample handling
25 capacity for the additional extensions.

Patching unit P2

This is located in patch cabinet 28 where it provides a flying block B2 with an input plug
35 which plugs into socket 1 in first set 30 of terminations at the socket corresponding to outlet A' of the first outlet unit 26. The flying block B2 is equipped with outlet connectors P, Q, R, S providing for patch leads to connect the patching unit P2 to the voice link terminations in second set 31 of terminations providing for coupling to the two wire
30 phone system T.

In the exemplary embodiment the maximum number of phones that can run through an individual first patch unit P1 would be four (being a two wire system). The number would decrease to two phones on a system requiring 3 wires. It would be applicable to a communication systems involving four wires.

The outlets can on the patch unit P1 can be an RJ45 outlet or a BT type outlet or some other format as required.

10 The example describes use only in connection with phones. However the system can readily include data and/or phone extensions or combinations in view of widespread use of twisted pair cables for data transfer.

15 The method and apparatus of the present invention lend themselves to providing for the ready addition or modification of phone and/or data links into an existing system cheaply and readily without the cost and delay associated with existing methods of providing such additions or modifications. The method is not limited to particular connection types.

CLAIMS

- 1 A method of modifying a communication system, typically a Category 5 system
according to the Standard, including: an outlet unit including four outlets to
5 provide at a working region individual couplings to each of four telephone
handsets or comparable devices; each outlet having four discrete wire
terminations; a house cable containing at least four twisted pairs of conductors
and having one end from which the cables are connected to the outlet unit to
provide a discrete communication path along the cable for each handset; and a
10 cabinet unit providing a patch termination for each twisted pair of conductors
from the other end of the house cable to the one end (and from comparable other
ends of any other house cables from one or more further outlet units); and an
interface patch termination providing entry to a two wire telephone system;
characterised by the steps of:
- 15 removing the couplings of each individual hand set or comparable unit
from the outlet unit;
providing a first patching unit comprising a first length of cable containing
at least four twisted pairs of conductors;
one end of the cable having a termination in the form of four subsidiary
20 outlets each outlet providing a compatible coupling for an individual
telephone hand set or comparable device;
the other end of the cable having a termination in the form of a plug
compatible with one outlet of the outlet unit;
attaching at least some of the previously removed couplings of each
25 individual hand set or comparable unit, each to a subsidiary outlet;
inserting the termination at the other end of the cable into one of the outlets
on the outlet unit so as to link the subsidiary outlets to a given twisted pair
in the house cable;
providing a second patching unit comprising a length of second cable
30 containing at least four twisted pairs of conductors;
one end of the second cable having a termination in the form of a plug
compatible with a socket in the patch termination of the cabinet unit
corresponding to the end of the given twisted pair in the house cable; the

other end of the second cable to the one end providing a discrete path for each four subsidiary outlets of the first patching unit;
attaching each discrete path to the interface patch termination so that entry into the two wire telephone system is established as it was before the first
5 step of the present method was undertaken or in accordance with some other arrangement; and
attaching any further required telephone connection to vacant outlets in the outlet unit.

- 10 2 A patching unit for modifying a communication system comprising first and second patching units adapted to provide for undertaking the steps of the method of Claim 1.
- 3 A method of modifying a communication system as herein before described
15 with reference to the accompanying drawings.
- 4 A patching unit for modifying a communication system as hereinbefore described with reference to the accompanying drawings.